ENVIRONMENTAL ASSESSMENT

APPLICATION OF ESA 4(d) OPTIONS FOR PUGET SOUND, LOWER COLUMBIA RIVER AND UPPER WILLAMETTE RIVER EVOLUTIONARILY SIGNIFICANT UNITS OF CHINOOK SALMON

National Marine Fisheries Service
National Oceanic and Atmospheric Administration

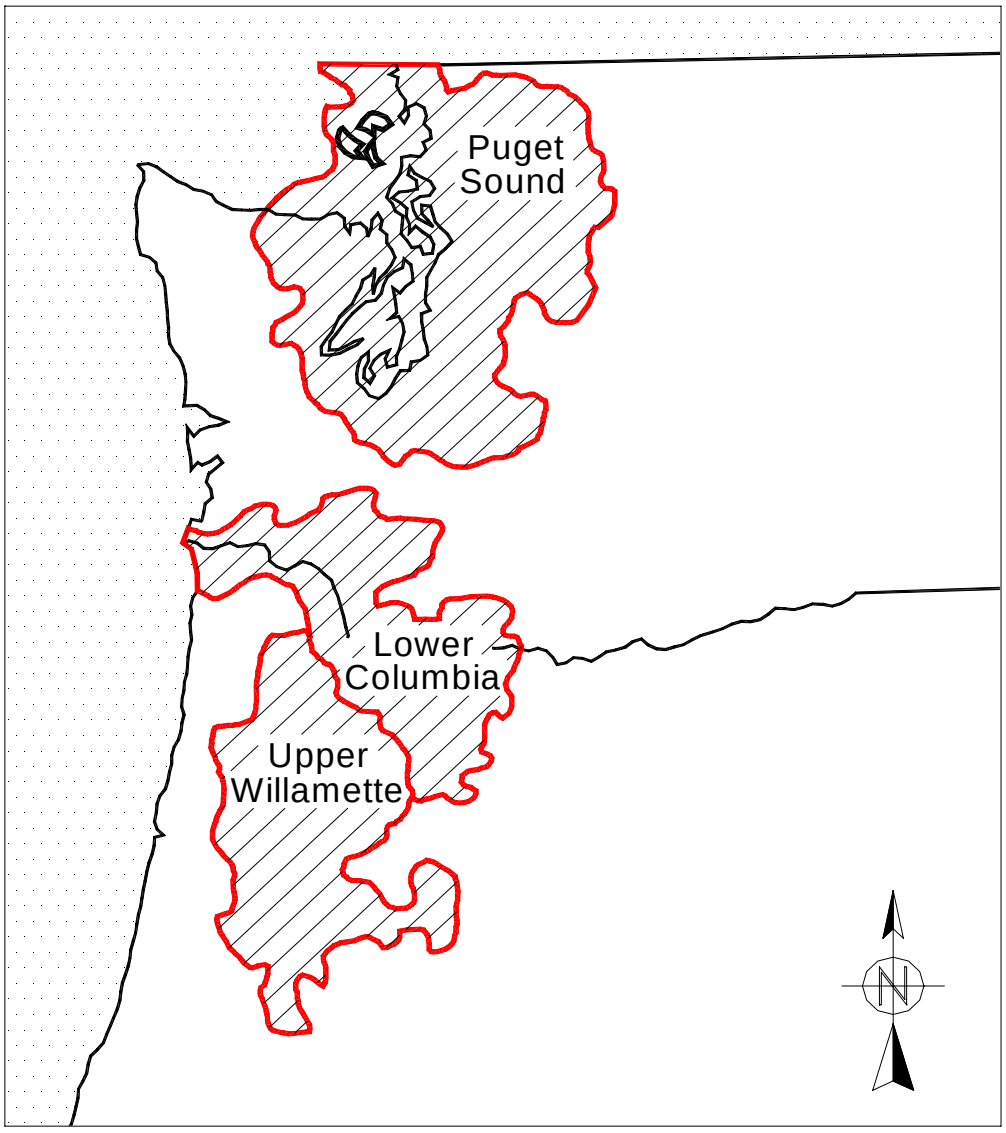
SUMMARY

Under the authority of the Endangered Species Act, the National Marine Fisheries Service is proposing to apply certain protective regulations to the Puget Sound (PS), Lower Columbia River (LCR), and Upper Willamette River (UWR) Evolutionarily Significant Units (ESUs) of threatened chinook salmon. This Environmental Assessment (EA) describes and evaluates five alternatives for protective regulations for these ESUs. The environmental impacts of the alternative actions were assessed relative to baseline conditions established by existing laws. The results of this analysis indicate that no significant impacts on the human environment are expected to result from implementation of the preferred or potential future alternative actions, or from any combination of those alternatives.

1. PURPOSE AND NEED FOR ACTION

Under the authority of the Endangered Species Act (ESA), the National Marine Fisheries Service (NMFS) completed a comprehensive status review of 15 Evolutionarily Significant Units (ESUs) of west coast chinook salmon (*Oncorhynchus tshawytscha*) in Washington, Oregon, Idaho and California (NMFS 1998a). On March 9, 1998, NMFS relied on this status review in issuing a proposed rule to list two ESUs as endangered, five ESUs as threatened, and one as warranting redefinition (63 FR 11482). On March 16, 1999, NMFS issued a final rule listing three ESUs as threatened and one as endangered and deferring decisions on the remaining ESUs. This Environmental Assessment (EA) addresses the three threatened ESUs (Puget Sound, PS; Lower Columbia River, LCR; and Upper Willamette River, UWR) (Figure 1).

CHINOOK ESUs



The March 9, 1998 proposed rule summarized information on the life history and ecology of chinook salmon, decline or extirpation of the species from its historical range, factors affecting their decline, and efforts being made to protect the species. Background "Status Reviews" of chinook salmon (NMFS 1998a, NMFS 1998c) and "Factors Contributing to the Decline of Chinook Salmon" (NMFS 1998b) provide additional information on these matters. See also NMFS' web site at www.nwr.noaa.gov.

Section 9(a) of the ESA prohibits certain activities that directly or incidentally take species that are listed as endangered. These prohibitions make it illegal for any person subject to the jurisdiction of the United States to take (take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, or collect, or to attempt any of these activities), import or export, ship in interstate commerce in the course of commercial activity, or sell or offer for sale in interstate or foreign commerce any endangered species. The prohibitions are automatically invoked when a species is listed as endangered, but not when a species is listed as threatened. Section 4(d) of the ESA provides that whenever a species is listed as threatened, the Secretary of Commerce shall issue such regulations as are deemed necessary and advisable to provide for the conservation of the species. A 4(d) regulation could range from very minimal provisions to imposition of all of the prohibitions applicable to endangered species under Section 9(a). In crafting a 4(d) rule for the PS, LCR, and UWR chinook ESUs, NMFS has recognized that while many ongoing protective efforts are likely to promote the conservation of chinook, these efforts alone are not sufficient to achieve long-term conservation and recovery of chinook at the scale of an individual ESU and that therefore protective regulations are necessary and advisable.

This EA describes and evaluates five alternative actions (alternative ESA section 4(d) rules) for protection of the PS, LCR, and UWR chinook ESUs. The environmental impacts of the alternative actions were assessed relative to baseline conditions established by existing laws. This EA was prepared in accordance with Council on Environmental Quality regulations for implementing NEPA (40 CFR Parts 1500-1508) and National Oceanographic and Atmospheric Administration environmental review procedures (Administrative Order 216-6, May 20, 1999). The lead agency for NEPA decision making is the NMFS.

The PS, LCR, and UWR chinook ESUs were listed as threatened based on the specific criteria in the ESA. With that listing, section 7 of the ESA applies. Section 7 of the ESA requires federal agencies to consult with NMFS and to ensure that activities they authorize, fund or conduct are not likely to jeopardize the continued existence of a species listed as threatened or endangered. Examples of federal activities that may affect listed chinook include operation of federal dams and hatcheries, consultation with tribes on

fisheries management plans, marine fishery regulations, federal land management activities and federal licensing and permitting for such activities as silviculture, mining, road construction, dam construction, discharge of fill material, and stream channelization or diversion. Development and harvest in the marine context are dealt with through section 7. Regardless of Section 4(d) regulations, federal activities may be authorized to incidentally take threatened and endangered species through a Section 7 consultation process. Federal activities that may affect threatened or endangered species can proceed as long as Section 7 consultation has been completed and such activities are done in accordance with any terms and conditions provided by NMFS in an incidental take statement accompanied by a biological opinion.

This EA addresses the added protections for the environment and for the listed ESUs that result from the take prohibitions imposed through section 4(d), over and above those that accrue from the listing action and section 7.

This EA describes five 4(d) actions being considered by NMFS. The preferred alternative applies Section 9(a) take prohibitions to most categories of activities, except for several programs or activities that provide adequate protection and conservation for the listed salmonids and for which additional federal protections are therefore not necessary and advisable. Environmental impacts are evaluated for the preferred alternative, a no action alternative, a full action alternative (all take prohibitions with no limitations), and two additional alternatives.

2. AFFECTED ENVIRONMENT

2.1 PUGET SOUND ESU

The Puget Sound ESU falls into portions of Clallam, Island, King, Kitsap, Jefferson, Mason, Pierce, San Juan, Skagit, Snohomish, and Whatcom counties in Washington. This ESU encompasses all naturally spawned spring, summer and fall runs of chinook salmon in the Puget Sound region from the North Fork Nooksack River to the Elwha River on the Olympic Peninsula. Puget Sound stocks tend to exhibit an ocean-type life history (migrating to the ocean as young-of-the-year), although a high proportion of some spring-run populations migrate as yearlings (stream-type life history). They all tend to mature at ages three and four and have a coastally-oriented ocean migration pattern. Factors for decline of Puget Sound chinook salmon include habitat blockages, hatchery introgression, urbanization, logging, hydropower development, harvest, and flood control and flow effects.

Land ownership in this ESU consists of approximately 30% Federal, 7% State, and 63% other. Numerous Native American tribes occupy this region, including the Nooksack, Lummi, Samish, Upper Skagit, Swinomish, Lower Skagit, Kikiallus, Stillaguamish, S'Klallam, Snohomish, Quileute, Skokomish, Skykomish, Snoqualmie, Suquamish, Duwamish, Squaxin, Muckleshoot, Puyallup, Steilacoom, and Nisqually.

The range of this ESU includes three other animals listed as endangered, five listed as threatened, and one proposed as threatened. The endangered animals include the brown pelican (*Pelecanus occidentalis*), American peregrine falcon (*Falco peregrinus anatum*), and the grizzly bear (*Ursus arctos*). The threatened animals include the marbled murrelet (*Brachyramphus marmoratus),* Aleutian Canada goose - wintering (*Branta canadensis leucopareia),* northern spotted owl (*Strix occidentalis caurina),* Oregon silverspot butterfly (*Speyeria zerene hippolyta*), and the bald eagle (*Haliaeetus leucocephal*). The Hood Canal summer chum (*Oncorhynchus keta*) is proposed to be listed as threatened.

Two plants within the range of this ESU are listed as endangered and three plants are listed as threatened. The endangered plant species are the Bradshaw's lomatium (*Lomatium bradshawii*) and swamp sandwort (*Arenaria paludicola*). Threatened species include golden Indian paintbrush (*Castilleja levisecta*), Nelson's checker mallow (*Sidalcea nelsoniana*), and howellia (*Howellia aquatilis)*.

2.2 LOWER COLUMBIA RIVER ESU

The Lower Columbia River ESU falls into portions of Clark, Cowlitz, Skamania, and Wahkiakum counties in Washington and Clatsop, Columbia, Multnomah, and Clackamas counties in Oregon. This ESU includes all naturally spawned populations from the mouth of the Columbia River to the crest of the Cascade Range, excluding populations above Willamette Falls. Not included in the ESU are stream-type spring chinook found in the Klickitat River (which are considered part of the Mid-Columbia River spring-run ESU). Lower Columbia River stocks tend to exhibit an ocean-type life history (migrating to the ocean as young-of-the-year), although a high proportion of some spring-run populations migrate as yearlings (stream-type life history). Factors for decline of chinook salmon in this ESU include hatchery introgression, habitat blockages, logging, eruption of Mount Saint Helens, hydropower development, predation, and harvest.

Land ownership in this ESU consists of approximately 31% Federal, 8% State, and 61% other. Native American tribes within this ESU include the Yakima, Warm Springs, Clatsop, Cowlitz, and Chinook.

The range of this ESU includes four other animal species listed as endangered and seven listed as threatened. The endangered animal species include the gray wolf (*Canis lupus*), brown pelican (*Pelecanus occidentalis*), American peregrine falcon (*Falco peregrinus*), and the Columbian white-tailed deer (*Odocoileus viginianus leucurus*). The threatened species are the lower Columbia River chum (*Oncorhynchus keta*), lower Columbia River steelhead (*Oncorhynchus mykiss*), marbled murrelet (*Brachyramphus marmoratus*), Western snowy plover (*Charadrius alexandrinus nivosus),* Oregon silverspot butterfly (*Speyeria zerene hippolyta*), bald eagle (*Haliaeetus leucocephalus*), and the Northern spotted owl (*Strix occidentalis caurina*).

One plant is listed as endangered and three plants are listed as threatened within the range of this ESU. Listed plant species include the endangered Bradshaw's lomatium (*Lomatium bradshawii*) and the threatened golden Indian paintbrush (*Castilleja levisecta*), Nelson's checker mallow (*Sidalcea nelsoniana*), and howellia (*Howellia aquatilis)*.

2.3 UPPER WILLAMETTE RIVER ESU

The Upper Willamette River ESU is located in portions of Benton, Clackamas, Lane, Linn, Marion, Polk, Washington, Yamhill Counties in Oregon and includes the Willamette River and its tributaries, upstream of Willamette Falls. This ESU includes naturally spawned spring-run populations above Willamette Falls. Fall chinook are not naturally spawning in this ESU, although they are introduced, and are not considered a population for the purposes of defining this ESU. Historically, the naturally spawning populations in this ESU exhibited both stream and ocean-type life histories and returned at three and four years of age.

The portion of the Willamette River downstream of Willamette Falls is included in the Lower Columbia River ESU. The upper river has been separated from the lower river, because NMFS has determined that the chinook from the upper river are genetically distinct from those in the lower river. Willamette Falls historically only provided a small window of opportunity for upriver migration, so reproductive isolation occurred.

Key factors affecting chinook in this ESU include habitat blockages, hatchery introgression, urbanization, logging, hydropower development, and harvest. Land ownership in this ESU is approximately 16% Federal, 1% State, and 83% other.

There are four animals within the range of this ESU listed as Federally endangered and one proposed for listing. Four animals are listed as threatened and two are proposed to be listed as threatened. Endangered animals include the Umpqua cutthroat trout

(*Oncorhynchus clarki clarki)*, Oregon chub (*Oregonichthys crameri*), American peregrine falcon (*Falco peregrinus anatum*), and the gray wolf (*Canis lupis*). Fender's blue butterfly (*Icaricia icarioides fenderi*) is proposed for listing as endangered. The animals listed as threatened include lower Columbia River steelhead (*Oncorhynchus mykiss)*, Aleutian Canada goose - wintering (*Branta canadensis leucopareia)*, northern spotted owl (*Strix occidentalis caurina)*, and the bald eagle (*Haliaeetus leucocephal*). The upper Willamette River steelhead (*Oncorhynchus mykiss*) and Columbia River basin bull trout (*Salvelinus confluentus*) are proposed to be listed as threatened.

Within the range of this ESU, Bradshaw's lomatium (*Lomatium bradshawii*) is Federally listed as endangered and Willamette daisy (*Erigeron decumbens* Nutt. var. *decumbens*) is proposed for listing. The golden paintbrush (*Castilleja levisecta* Greenm.), howellia (*Howellia aquatilis* A. Gray), and Nelson's sidalcea (*Sidalcea nelsoniana* Piper) are listed as threatened, and Kincaid's lupine (*Lupinus sulphureus* Douglas ssp. *kincaidii*) is proposed for listing.

3. ALTERNATIVE ACTIONS

This EA addresses the following five alternatives for applying ESA Section 4(d) to the listing of the PS, LCR, and UWR chinook:

- **Full Action Alternative:** application of all Section 9(a) take prohibitions with no limitations beyond Section 10 provisions.

- **Preferred Alternative:** application of Section 9(a) take prohibitions generally except with respect to Section 10 provisions and certain categories of activities that adequately protect or conserve the listed species and for which additional federal protections are therefore not necessary and advisable.

- **Alternative A:** application of the same prohibitions and limitations on take prohibitions as described for the Preferred Alternative plus future additional limitations for actions that NMFS considers adequate to protect chinook.

- **Alternative B:** limiting the application of Section 9(a) take prohibitions for all activities conducted in accordance with state salmon conservation plans that NMFS considers adequate to protect chinook.

- **No Action Alternative:** no Section 9(a) take prohibitions or other protective regulations.

The preferred alternative has been developed because NMFS believes that its prohibitions are those necessary and advisable to conserve and restore chinook in the PS, LCR, and UWR ESUs and because the future alternatives (A and B) are not feasible at this time. Alternatives A and B may be implemented by NMFS at a later date, as state or local watershed plans and regulations continue to develop. For that reason, the alternatives are explained here and are compared to the preferred action with regard to potential environmental impacts.

3.1 Full Action Alternative

The full action alternative is the implementation of all Section 9(a) prohibitions with no limitations. NMFS would have adopted this alternative if there were no categories of action governed by other entities in a manner adequate for the protection of chinook in the threatened ESUs. NMFS considers that universal implementation of all Section 9(a) prohibitions is not necessary because of particular conservation and management efforts by the other governmental entities. These conservation and management efforts include fishery management, hatchery management, research and monitoring, and habitat related activities that are all tailored toward conserving or protecting threatened chinook and their habitat.

Section 9(a) prohibitions focus on the commerce, transport, and taking of listed species. ESA defines take broadly to include not only killing but any activity that harms a listed species or alter its habitat in a manner detrimental to the continued existence of the species. Prohibitions on take of individuals apply to direct harvest, adverse hatchery-related actions, and impacts due to disturbance of habitat. These prohibitions apply to all chinook within the listed ESUs.

Activities that NMFS believes could potentially harm, injure or kill chinook and result in "take" include, but are not limited to:

- Land-use activities that adversely affect chinook habitat (e.g., logging, grazing, farming or road construction particularly when conducted in riparian areas or areas susceptible to mass wasting and surface erosion);

- Destruction or alteration of chinook habitat, such as removal of large woody debris and "sinker logs" or riparian shade canopy, dredging, discharge of fill material, draining, ditching, diverting, blocking, or altering stream channels or surface or ground water flow (except for the habitat alteration activities that are within the limitation on take prohibitions);

- Discharges or dumping of toxic chemicals or other pollutants (e.g., sewage, oil, gasoline) into waters or riparian areas supporting the listed chinook, particularly when done outside of a valid permit for the discharge;

- Violation of discharge permits through actions that actually impact water quality;

- Pesticide applications that adversely affect the biological requirements of the species;

- Interstate and foreign commerce of listed chinook and import/export of listed chinook without an ESA permit, unless the fish were harvested pursuant to this rule;

- Collecting or handling listed chinook;

- Introduction of non-native species likely to prey on listed chinook or displace them from their habitat;

- Water withdrawals in areas where important spawning or rearing habitats may be adversely affected.

Individuals and entities could be expected to alter proposed or ongoing activities to avoid violating the 4(d) rule. Also, Section 10 of the ESA allows parties whose activities may result in take of a listed species to obtain a take permit for scientific research or enhancement actions [Section 10(a)(1)(A)]. Section 10(a)(1)(B) permits can authorize take which is an incidental result of (rather than the purpose of) conduct of some otherwise lawful activity. If a section 10 permit is issued, the Section 9(a) take prohibitions no longer apply to the permitted action.

3.2 Preferred Alternative

At present, NMFS proposes to apply Section 9(a) prohibitions, as described above, to take of PS, LCR, and UWR chinook, except for certain categories of activities that provide for the conservation of or are otherwise adequately protective of threatened chinook in those ESUs.

Limits on Take Prohibitions

The categories of activity on which NMFS finds it not necessary and advisable to impose take prohibitions include those described in the interim 4(d) rule developed for threatened Southern Oregon/Northern California Coast coho ESU (62 FR 38479, July 18, 1997), with several additions. Under specified conditions and in appropriate geographic areas, these include: (1) activities conducted in accord with ESA incidental take authorization through ESA sections 7 or 10; (2) ongoing scientific research activities, for a period of six months; (3) emergency actions related to injured, stranded, or dead salmonids; (4) fishery management activities; (5) hatchery and genetic management programs; (6) scientific research activities permitted or conducted by the states; (7) state, local, and private habitat restoration activities; (8) road maintenance activities in Oregon; (9) certain park maintenance activities in the City of Portland, Oregon; (10) certain development activities within urban areas; (11) properly screened water diversion devices; and (12) forest management activities within the state of Washington. Some programs apply within both ESUs, and some to only one. A summary of each of the limitations as they apply to these three threatened chinook ESUs is provided below.

Fishery Management Activities

State fishery management programs that are specifically implemented to minimize impacts of recreational fisheries can be developed into Fishery Management and Evaluation Plans (FMEPs). FMEPs must include measures to minimize and adequately limit take of listed chinook, such as allowing only marked fish of hatchery origin to be retained, permitting open fishing seasons only where and when hatchery fish dominate, providing sanctuary areas for naturally-spawning chinook, and regulating timing of other fisheries to minimize incidental take of juvenile chinook. The FMEPs also need to include monitoring of take of listed chinook, annual coordination with NMFS on the fishing regulations, and providing NMFS with access to all data and reports related to the program. NMFS believes that a fishery program with these characteristics will adequately protect chinook. Once an FMEP is deemed protective of chinook by NMFS it will enter into a Memorandum of Agreement with the state to insure adequate implementation of the plan. Prior to finding any new or amended FMEP adequate, NMFS will make the plan available for public review and comment for a period of not less than 30 days.

Artificial Propagation Activities

As part of the fishery management activities mentioned above, hatchery chinook are produced for recreational and tribal fisheries, usually as mitigation for lost spawning habitat upstream of impassable dams. In order for their chinook artificial production programs to be free of take prohibitions, a state must develop a Hatchery and Genetic Management Plan (HGMP) and assure adequate implementation through an MOA with NMFS.

Hatchery stocks can, however, be considered detrimental to the naturally spawning populations. There is considerable concern that hatchery fish have a greater degree of straying to other non-natal areas where they cross-breed with naturally occurring populations. The result can be significant loss of fitness in local populations and loss of diversity among populations and must be managed to avoid impacts to naturally produced stocks. In order to ensure that broodstock collection and associated production is appropriate, NMFS has developed criteria for evaluating HGMPs. These criteria include strict limits on collecting broodstock unless the population is functioning at or above a viable population threshold. If it is not collection would be appropriate only if the intended goal of the collection program is strictly to enhance the propagation or survival of the listed ESU, or in limited circumstances where the donor population is well above critical thresholds although not yet viable, where the collection will not appreciably slow the attainment of viable status.

An HGMP also must appropriately prioritize broodstock collection programs, demonstrate adequate existing fishery management programs and regulations, demonstrate adequate hatchery facilities, contain effective monitoring efforts, and include specific hatchery practice protocols aimed at conserving the genetic integrity of listed, naturally spawning chinook.

Scientific Research and Monitoring Activities

In carrying out their fishery management responsibilities in Oregon and Washington, state fishery management agencies conduct or permit a wide range of scientific research and monitoring studies on various fisheries, including studies on PS, LCR, and UWR chinook. In general, NMFS concludes that these activities are vital for improving our understanding of the status and risks facing chinook and will provide critical information for assessing the effectiveness of current and future management practices. Therefore NMFS does not find it necessary and advisable to prohibit take of threatened chinook in the PS, LCR, and UWR chinook ESUs associated with scientific research and monitoring, provided that: (1) research and monitoring involving directed take of chinook is conducted or supervised by Oregon Department of Fish and Wildlife (ODFW)

personnel (in Oregon), or by Washington Department of Fish and Wildlife (WDFW) personnel (in Washington); (2) the agencies provide NMFS with a list of all research and monitoring activities involving chinook directed take planned for the coming year for NMFS' review and approval; (3) the agencies provide NMFS with the results of research and monitoring studies (including a report of the directed take resulting from these studies) directed at PS, LCR, and UWR chinook; (4) the agencies provide NMFS annually with a list of all research and monitoring studies they permit that may incidentally take listed chinook during the coming year and report the level of incidental take from the previous year's research and monitoring activities, for NMFS' review and approval; and (5) research and monitoring activities involving electrofishing in any body of water known to or suspected to contain chinook comply with "Guidelines for Electrofishing Waters Containing Salmonids Listed Under the Endangered Species Act" (NMFS 1998), or else requires a section 10 research permit from NMFS prior to commencing operations.

Habitat Restoration Activities

Under the preferred alternative, certain habitat restoration activities that are likely to contribute to conserving chinook are not subject to the take prohibitions. NMFS feels that projects based on a watershed or basin scale are likely to be the most beneficial at conserving chinook. Incidental take of threatened chinook that results from a habitat restoration activity would not be prohibited provided that Oregon or Washington has certified in writing that the activity is part of a watershed conservation plan consistent with the watershed plan guidelines that NMFS has approved, and NMFS concurs. Until a watershed conservation plan is implemented or until two years following the effective date of a final 4(d) rule (whichever comes first), incidental take resulting from six specified categories of habitat restoration activity would not be prohibited if conducted in compliance with conditions and guidance listed in the proposed rule. If no conservation plan has been approved for a watershed after two years following the effective date of the interim rule, the general Section 9(a) take prohibitions applicable to all other habitat-affecting activities would apply to individual restoration activities.

Water Diversion Screening

A widely recognized cause of mortality among anadromous fish is operation of water diversions without adequate screening. While state laws and Federal programs have long recognized these problems and encouraged or required adequate screening of diversion ditches, structures, and pumps, large numbers of diversions are not adequately screened

and remain a threat, particularly to juvenile salmonids. This proposed rule would limit the application of take prohibitions for any diversion screened in accord with NMFS' Juvenile Fish Screening Criteria, Northwest Region, Revised February 16, 1995 with Addendum of May 9, 1996. The proposed limitation on take prohibitions applies only to physical impacts on listed fish due to entrainment or similar impacts of the act of diverting.

Routine Road Maintenance Activities

The Oregon Department of Transportation (ODOT), working with NMFS, has refined its routine road maintenance program to protect listed salmonids and their habitat and to minimize the impacts of road maintenance activities on receiving streams. The program governs a wide variety of maintenance activities including surface and shoulder work; ditch, bridge, and culvert maintenance; snow and ice removal; emergency maintenance; and mowing, brush control and other vegetation management. The program directs activity toward favorable weather conditions, increases attention to erosion control, prescribes appropriate equipment use, governs disposal of vegetation or sediment removed from roadsides or ditches, and includes other improved protections for listed salmonids, as well as improving habitat conditions generally. NMFS does not find it necessary and advisable to apply take prohibitions to routine road maintenance work performed consistent with the Guide, because in NMFS' judgement doing so would not increase the level of protection provided for listed chinook. The Guide governs only routine maintenance activities of ODOT staff. Other activities, including new construction, major replacements, or activity for which a Corps of Engineers permit is required, are not covered by the routine maintenance program and therefore would remain subject to the take prohibitions. NMFS proposes to limit the application of take prohibitions for any incidental take of chinook that results from road maintenance activities (other than pesticide spraying and dust abatement), so long as the activity is covered by and conducted in accordance with ODOT's Maintenance of Water Quality and Habitat Guide (June, 1999).

Portland Parks Integrated Pest Management

The City of Portland, Oregon, Parks and Recreation (PP&R) has been operating and refining an integrated pest management program for 10 years, with a goal of reducing the extent of its use of herbicides and pesticides in park maintenance. The program's "decision tree" place first priority on prevention of pest (weeds, insects, disease) through policy, planning, and avoidance measures (design and plant selection). Second priority is

on cultural and mechanical practices, trapping, and biological controls. Use of biological products, and finally of chemical products, is to be considered last. PP&R's overall program affects only a small proportion of the land base and waterways within Portland, and serves to minimize any impacts on listed salmonids from chemical applications associated with that specific, limited land base. NMFS believes it would contribute to conservation of listed salmonids if jurisdictions would broadly adopt a similar approach to eliminating and limiting chemical use in their parks and in other governmental functions. The PP&R has recently developed special policies to provide extra protections near waterways and wetlands, including a 25 foot buffer zone in which pesticide types are limited and application is spot applied After careful analysis of PP&R's integrated program for pest management, NMFS concludes that it provides adequate protection for listed chinook with respect to the limited use the program may make of the above listed chemicals. NMFS does not find it necessary and advisable to apply additional Federal protections in the form of take prohibitions to activities conducted under PP&R's integrated pest management program.

New Urban Density Development

As a general matter, significant new urban scale developments have the potential to degrade chinook habitat and to injure or kill chinook through a variety of impacts, but with appropriate safeguards can be specifically tailored to minimize impacts on listed chinook to an extent that makes additional Federal protections unnecessary for conservation of the listed ESU. NMFS proposes not to apply take prohibitions to new developments governed by and conducted in accord with adequate city ordinances that help conserve anadromous salmonids. Similarly, take prohibitions would not be applied to development consistent with an Urban Reserve Plan that Metro has evaluated and approved as in compliance with adequate guidelines. Guidelines or ordinances must assure that urban reserve plans or developments will adequately address twelve issues, including appropriate siting, storm water discharge impacts to water quality, quantity, and hydrograph characteristics, riparian buffers, avoidance of stream crossings by roads wherever possible, protecting historic stream meander patterns and wetlands, preserving flood capacity, and erosion control. Where NMFS finds ordinances or Metro guidelines adequate, imposition of take prohibitions is not necessary and advisable.

Forest Management in Washington

In the State of Washington, discussions among timber industry, tribes, state and federal agencies, and interest groups led to a February 22, 1999 Forest and Fish Report (FFR) to

Governor Locke which provides important improvements in forest practice regulation. If implemented by the Washington Forest Practices Board in a form at least as protective as laid out in the FFR, these will provide a significant level of protection to listed chinook The FFR also mandates that all existing forest roads be inventoried for potential impacts on salmonids through culvert inadequacies, erosion, slope failures, and the like, and all needed improvements be completed within 15 years. Because of the substantial detrimental impacts of inadequately sited, constructed or maintained forest roads on salmonid habitat, this feature of the overall FFR provides a significant conservation benefit for listed ESUs in Washington. NMFS does not propose to apply section 9 take prohibitions to non-federal forest management activity conducted in the State of Washington in compliance with the FFR.

3.3 Alternative A

Alternative A is similar to the preferred action alternative, with additional limitations to the Section 9(a) take prohibitions. These additional limitations may be for state laws, regulations, and policies that NMFS finds will improve habitat conditions, adequately limit incidental take of listed, naturally-spawning chinook, or otherwise contribute to the conservation of threatened chinook. Such activities could be those related to water quality, water quantity, riparian zone and land management, or channel maintenance.

Several processes or activities in Oregon and Washington are aimed at improving habitat for salmonids, many of which involve cooperative forums. Examples include the Lower Columbia Steelhead Restoration Initiative, the Willamette Restoration Initiative, the Oregon Plan for Salmon and Watersheds, and Washington's statewide salmon recovery strategy. These and other efforts may lead to specific programs, such as agricultural water quality improvement programs, urban storm water programs, for which the take prohibitions might be limited in a future amendment to a 4(d) rule. Alternative A reflects the possibility that one or more of these programs might be strengthened to a point where no additional federal protections are necessary and advisable, and that NMFS would therefore remove the prohibitions from activities governed by the program.

3.4 Alternative B

With Alternative B, the state of Oregon and/ or Washington would have developed a fully adequate comprehensive salmon conservation plan adequate to ameliorate all factors for decline for chinook in an ESU. The protective measures mentioned in alternative A and others would be assembled into a comprehensive plan for each watershed, basin or other

geographic unit. If such a plan was presented to NMFS, there would be no need for implementation of Section 9(a) take prohibitions, except where an activity did not follow the plan. All activities conducted in accordance with the plan would be within a limitation on application of the Section 9(a) take prohibitions and would therefore not require a Section 10 permit.

NMFS has provided guidance as to the critical elements of a salmon conservation plan. A plan must identify major factors that contributed to chinook decline, establish conservation/restoration action priorities, establish objectives and timelines for correcting the factors for decline, develop quantifiable criteria and standards by which progress toward objectives can be measured, and adopt actions to achieve objectives. It should address instream and upland habitat conditions, water quality and quantity, land use practices, migration barriers, and any other impediment to chinook recovery. The plan must provide a high level of certainty that the actions will be implemented (including necessary authorizations, commitments, funding, staffing, and enforcement measures). It must also include a comprehensive monitoring and reporting program that is effective at measuring whether objectives are being met and determining whether the population is increasing or decreasing. The plan should consider other Federal, state, tribal, local, and other activities and try to incorporate those activities. Finally, the plan should use an adaptive management approach that can be used to generate needed information.

3.5 No Action Alternative

The no action alternative would reflect a decision by NMFS that no protective regulations are needed for the conservation of chinook in the PS, LCR, and UWR ESUs. NMFS has not proposed the no action alternative because it does not find that existing controls would provide a sufficient level of protection to chinook.

4. ENVIRONMENTAL CONSEQUENCES

To determine the potential environmental impacts of the preferred action alternative, an impact checklist was developed. The checklist was used as a tool to assess any potentially significant impacts of the preferred alternative relative to the least protective measure (the no action alternative). The likelihood of any conservation action occurring at a particular location or time – and, thus impacts of this action on particular environmental attributes or resources – is unpredictable. However, it is expected that the four action alternatives – or any combination of these four action alternatives adopted in the 4(d) rule – would result in the same or similar outcome in terms of non-federal actions

taken to conserve threatened chinook. The primary differences would reside in the process and timing of these actions. With the Full Action Alternative, NMFS would assume greater responsibility for directly ensuring that take prohibitions are properly implemented and enforced (although development and enforcement of state conservation plans and regulations would continue). The preferred and future alternatives (A and B) reflect different scopes of adequately protective state programs which may make additional NMFS prohibitions unnecessary (although NMFS would regularly evaluate whether the programs were achieving the expected level of protection and conservation, and could at any time impose take prohibitions or other protections, as needed). However, the ultimate impact of any course of action (other than the no-action alternative) on both threatened chinook and on the environmental features within the range of the threatened PS, LCR, and UWR chinook ESUs would be similar.

Regardless of which alternative is selected, it is expected that measurable changes in response to implementation of the 4(d) rule would not happen immediately – it would take some time to broaden understanding of the problems, develop corrective rules and policies that are appropriate and effective, and resolve the inevitable administrative and legal challenges. Therefore, the most reasonable scenario is that additional measures protective of threatened chinook would be applied gradually, whether in response to the risks of ESA enforcement, or as a result of further development of state or voluntary programs to accommodate chinook needs. Consequently, resulting actions and their environmental impacts are not expected to be significantly different in either substance or timing among the four action alternatives or any combination of these alternatives.

A summary of each of the categories (land use and planning, earth, water, air quality, transportation/circulation, noise, biological resources, energy and mineral resources, public service, utilities and service systems, aesthetics, cultural resources, and recreation) follows the checklist. Each summary addresses existing conditions and incremental impacts expected from implementation of the preferred alternative and the other alternatives. The incremental impact is determined from baseline conditions, which include all existing regulations, policies and programs that directly or indirectly contribute to the protection and restoration of chinook and is considered the same as the no action alternative. For example, improvements in the water quality and habitat in streams important to chinook are required under the Clean Water Act and other regulations so implementation of the chinook 4(d) option is expected to be insignificant or potentially result in a positive effect because of additional efforts to protect or improve water quality. In addition, any future regulation, policy, program, or plan that NMFS feels is protective of chinook and for which NMFS limits the Section 9(a) prohibitions, will further reduce the impacts of the 4(d) rule. All of the potential impacts will be due to

those state or other governmental regulations, policies, programs, or plans, rather than the 4(d) rule itself.

A discussion of the potential impacts to chinook as the result of implementation of a 4(d) option is included in the biological resources section under impact summaries. The 4(d) option selected will be designed to improve the habitat and reproductive success of chinook populations and thus be protective of threatened chinook. In general, the least protective option is the no action alternative, while all of the other options are intended to achieve similar results with regard to protection of chinook. NMFS will not implement a rule with limits on application of the Section 9(a) prohibitions, unless it is confident that even with those limitations chinook will be adequately protected.

Table 4-1. NEPA Compliance Checklist for evaluating potential negative impacts of options of protective regulations for threatened PS, LCR, and UWR chinook.

	Potentially Significant Impact	**Potentially Significant Unless Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact/ Positive Effect**
LAND USE AND PLANNING. Would implementation of the 4(d) options result in:				
a) Conflict with general plan designation or zoning?	☐	☐	☑	☐
b) Conflict with applicable environmental plans or policies adopted by agencies with jurisdiction over the project?	☐	☐	☐	☑
c) Incompatibility with existing land use in the vicinity?	☐	☐	☑	☐
d) Effects on agricultural resources or operations (e.g., impacts to soils or farmlands, or impacts from incompatible land uses)?	☐	☐	☑	☐
EARTH. Would implementation of the 4(d) options result in:				
a) Unstable earth conditions or in changes in geologic substructures?	☐	☐	☐	☑
b) Disruptions, displacements, compaction or overcovering of the soil?	☐	☐	☐	☑
c) Change in topography or ground surface relief features?	☐	☐	☐	☑

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact/ Positive Effect
d) Any increase in wind or water erosion of soils, either on or off the site?	☐	☐	☐	☑
e) Changes in deposition or erosion of beaches and, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean of any bay, inlet or lake?	☐	☐	☐	☑
f) The destruction, covering or modification of any unique geologic or physical features.	☐	☐	☐	☑
WATER. Would implementation of the 4(d) options result in:				
a) Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff?	☐	☐	☐	☑
b) Discharge into surface waters or other alteration of surface water quality (e.g., temperature, dissolved oxygen or turbidity)?	☐	☐	☐	☑
c) Changes in the amount of surface water in any water body?	☐	☐	☐	☑
d) Changes in currents, or the course of direction of water movements?	☐	☐	☐	☑
e) Change in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations, or through substantial loss of groundwater recharge capability?	☐	☐	☐	☑
f) Altered direction or rate of flow of groundwater?	☐	☐	☐	☑
g) Impacts to groundwater quality?	☐	☐	☐	☑
h) Substantial reduction in the amount of groundwater otherwise available for public water supplies?	☐	☐	☑	☐
AIR QUALITY. Would implementation of the 4(d) options result in:				
a) Violation of any air quality standard or contribute to an existing or projected air quality violation?	☐	☐	☐	☑
TRANSPORTATION/CIRCULATION. Would implementation of the 4(d) options result in:				
a) Increased vehicle trips or traffic congestion?	☐	☐	☐	☑

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact/ Positive Effect
b) Rail, waterborne or air traffic impacts?	☐	☐	☐	☑
NOISE. Would implementation of the 4(d) options result in:				
a) Increases in existing noise levels?	☐	☐	☐	☑
b) Exposure of people to severe noise levels?	☐	☐	☐	☑
BIOLOGICAL RESOURCES. Would implementation of the 4(d) options result in:				
a) Endangered, threatened, or rare species or their habitats (including but not limited to plants, fish, insects, animals, and birds)?	☐	☐	☐	☑
b) Locally designated species (e.g., heritage trees)?	☐	☐	☐	☑
c) Locally designated natural communities (e.g., oak forest, coastal habitat, etc.)?	☐	☐	☐	☑
d) Wetland habitat (e.g., marsh, riparian, and vernal pool)?	☐	☐	☐	☑
e) Wildlife dispersal or migration corridors?	☐	☐	☐	☑
ENERGY AND MINERAL RESOURCES. Would implementation of the 4(d) options result in:				
a) Conflict with adopted energy conservation plans?	☐	☐	☐	☑
b) Use of non-renewable resources in a wasteful and inefficient manner?	☐	☐	☐	☑
c) Loss of availability of a known mineral resource that would be of future value to the region and the residents of the State?	☐	☐	☑	☐
PUBLIC SERVICES. Would implementation of the 4(d) options result in:				
a) Effect to Governmental services (including enforcement and permitting)?	☐	☐	☑	☐
UTILITIES AND SERVICE SYSTEMS. Would implementation of the 4(d) options result in a need for new systems or supplies, or substantial alterations to the following utilities:				
a) Power or natural gas?	☐	☐	☑	☐
b) Local or regional water treatment or distribution facilities?	☐	☐	☑	☐
c) Sewer or septic tanks?	☐	☐	☑	☐
d) Storm water drainage?	☐	☐	☑	☐
e) Solid waste disposal?	☐	☐	☑	☐
f) Local or regional water supplies?	☐	☐	☑	☐

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact/ Positive Effect
AESTHETICS. Would implementation of the 4(d) options result in:				
a) Demonstrable negative aesthetic effect?	☐	☐	☐	☑
CULTURAL RESOURCES. Would implementation of the 4(d) options result in:				
a) Disturbance of paleontological resources?	☐	☐	☐	☑
b) Disturbance of archaeological resources?	☐	☐	☐	☑
c) Effects to historical resources?	☐	☐	☐	☑
d) The potential to cause a physical change which would affect unique ethnic cultural values?	☐	☐	☐	☑
e) Restriction of existing religious or sacred uses within the potential impact area?	☐	☐	☑	☐
f) Restriction of existing subsistence uses within the potential impact area?	☐	☐	☑	☐
RECREATION. Would implementation of the 4(d) options result in:				
a) Effects to existing recreational opportunities?	☐	☐	☑	☐

4.1 Impact Summaries

Land Use and Planning

The preferred alternative is not expected to result in significant negative impacts to or conflicts with land use and planning. Less than significant impacts could result from required changes in zoning, incompatibility with existing land use, and effects on agricultural resources. For example, if grazing, farming or development could potentially result in incidental take of chinook or their habitat, a Section 10 permit would be required, which would require mitigation and result in a potential impact. Mitigation requirements are difficult to predict, but could range from monitoring to efforts to avoid impacts to purchasing replacement land. Because these activities can be mitigated and because there are existing state and federal laws such as the Clean Water Act that already put constraints on many of these activities, the overall impact is expected to be less than significant. The potential impacts of the future alternatives (A and B) are expected to be less than the other alternatives, because the state or other governmental regulations, policies, programs, and plans would be causing any impacts, rather than the 4(d) option. The 4(d) rule would look more like alternative B as greater state and local (grass-roots)

efforts to regulate and enforce the activities that will protect chinook and their habitat develop. With full implementation of alternative B, there would be few or no expected impacts.

If NMFS chose to implement Section 9(a) take prohibitions without any limitations, potentially significant impacts to these activities could be expected, unless mitigated. With this alternative, all activities that have the potential to take chinook or their habitat would require a Section 10 incidental take permit and mitigation regardless of the scale or expected level of take of the project. It is possible that some activities or projects would not be permitted. The no action alternative is expected to have the least impacts to land use and planning activities, since regulations of these activities would essentially remain unchanged as a result of that 4(d) option.

Land use and planning activities that have the potential to improve stream conditions, such as setting up stream side riparian buffer zones, will most likely improve channel structure and water quality and thus improve stream conditions for chinook. These activities are expected to result from all of the alternatives, except the no action alternative.

Earth

Habitat restoration efforts implemented as part of the full action, preferred, and future (A and B) alternatives are expected to have positive effects on erosional characteristics in watersheds containing chinook, and therefore would not result in significant negative impacts. Typical habitat restoration projects include activities to stabilize banks and restore natural channel processes through stream flows and land use activity changes. In addition to potential land use changes protecting riparian zones, these measures would lead to revegetation, which in turn would reduce the erosion and transport of surface soils to the stream. Such activities could improve the water quality of the streams and potentially conserve soil conditions for agricultural and other uses. In some cases, the reduction in transport of sediments may increase the life of downstream reservoirs.

Under the no action alternative, improvements in control of sedimentation and streambed conditions could occur due to conservation measures planned by state and local agencies, but would not be as a result of implementing a 4(d) regulation. The no action alternative is therefore not expected to result in either positive or negative impacts to geologic (earth) features or conditions.

Activities that result in reduced erosion and therefore improved insect production and spawning habitat, as well as those that improve riparian canopy closure and thus stream temperatures will benefit chinook. These activities will most likely result from all of the 4(d) alternatives, except the no action alternative. As with land use and planning, alternative B may prove to be most efficient and perhaps effective at protecting chinook and their habitat, because it will involve activities at all levels.

Water

Improvements in water quality and habitat in streams important to chinook are already required by various Federal and state regulations. The preferred action alternative does not include any limitations on the take prohibitions directly related to water resources. Ongoing and future state or local habitat restoration/conservation efforts could result in additional water quantity and quality regulations. If these regulations result in improved water quantity and quality conditions that NMFS believes are adequate for the conservation of listed chinook, NMFS may implement one of the future alternatives that would limit application of the Section 9(a) take prohibitions for activities covered under these regulations.

Implementation of state or local regulations, policies, programs, or plans for increasing water in streams to restore chinook could have an effect on surface water quality and potentially surface and groundwater quantity. Such changes could include limits on future construction of water supply dams or expanded controls on the withdrawal of water from chinook streams for irrigation or municipal use. If NMFS feels these regulations are adequate for the protection of chinook, they may include them as part of any future alternatives (A & B). These effects are expected to be positive or beneficial for aquatic resources including chinook, and therefore would not result in significant impacts to water quality or quantity.

Implementation of the preferred alternative is expected to have a less than significant impact on the availability of public water supplies because it does not have any specific water quality or quantity parameters, and because other laws already exist to enforce water quality and quantity measures. Implementation of the future alternatives is also expected to result in a less than significant impact to public water supplies, because the policies governing water supplies would be implemented by the state or other governmental unit and would therefore not be a result of either of those 4(d) options. NMFS expects that the cooperative watershed planning process is the best way to avoid conflicts with human water use and water for aquatic resources and that measures can be

implemented in a way that avoids significant impacts to public water supplies while benefiting chinook.

The full action alternative may result in potentially significant positive impacts. Projects where water supply impacts potentially result in incidental take of chinook or their habitat would require a Section 10 permit and may require mitigation such as water conservation, purchasing alternative water supplies, monitoring, and habitat restoration. The full action alternative is expected to have a positive effect on water resources, potentially including restoring a more natural stream flow regime, increasing ground water recharge, and improving water quality.

With the no action alternative, actions to improve water quality, groundwater, or surface water flow could still be taken by states or other governments, but the action itself would not result in a significant impact. Water quality, groundwater and surface water flow could be reduced if existing laws, regulations, policies, or programs are not adequate for the conservation of water resources and therefore could result in an impact to chinook or their habitat.

Air Quality

None of the five 4(d) alternatives is expected to significantly impact air quality. Improved habitat conservation planning may lead to reduced soil exposure around streams which could result in reduced concentrations of suspended particulate matter. Reductions in the withdrawal of water for irrigation may increase the susceptibility of surface soils to aerial transport. These changes would be more pronounced in drier regions with extensive agriculture, which is not the case in the PS, LCR, and UWR ESUs, so the changes are expected to be small, geographically isolated, and insignificant to both air quality and chinook.

Transportation/Circulation

None of the five alternatives is expected to have significant impact on transportation or traffic patterns. Existing transportation systems (roads, rail, barge) will not be significantly impacted relative to changes that have occurred as a result of the chinook and other listings) and the subsequent implementation of the Section 7 consultation requirement for activities with Federal agency involvement.

Noise

Neither the preferred action alternative nor any of the other alternatives for the PS, LCR, and UWR chinook ESUs are expected to have any significant impact on noise levels.

Biological Resources

States are moving in the direction of watershed evaluation and management procedures (e.g., habitat conservation planning) for improving their aquatic and terrestrial habitats. Measures taken to improve water quality, water quantity, stream channel, riparian and watershed conditions in general will benefit chinook as well as numerous other plant and animal populations that share habitat with chinook. Many of the watersheds that are currently inhabited by chinook also contain other Federally listed animals and plants that would benefit from habitat improvements and conservation efforts implemented for chinook. The past and recent ESA listings are expected to broaden the scope of existing plans or accelerate new plan development and implementation.

Implementation of the full, preferred, and future (A and B) alternatives is expected to have a beneficial effect on biological resources, especially chinook. All of these 4(d) options have the explicit intend of providing for the conservation of chinook. These options provide for minimizing direct or indirect take of chinook and/or will include implementation of actions that improve existing habitat conditions for chinook including, but not limited to, improving water quality and quantity, minimizing impacts from hatchery operations, removing passage barriers, reducing watershed erosion, and restoring riparian vegetation. These options would therefore not result in significant negative impacts to biological resources.

Under the no action alternative, states may still implement protective measures for chinook, but those beneficial effects would not be as a result of the 4(d) rule. However, this alternative does not require implementation of protective actions. Chinook would suffer from the lack of any protection. Activities that could potentially take chinook would not be prohibited by NMFS.

Energy and Mineral Resources

Neither the preferred 4(d) alternative nor the other alternatives are expected to have a measurable effect or significant impact on energy resources in the PS, LCR, and UWR chinook ESUs. If the action leads to additional restrictions on mining or extraction of

other energy resources, it is expected that this would result in improved conservation actions, benefiting the environment as a whole and would not significantly impact the availability of these resources for human use.

The preferred actions could lead to restrictions on the future development of hydroelectric facilities, which may necessitate use of other fuels or other means for generating electricity. However, because these facilities are subject to licensing by the Federal Regulatory Energy Commission, they would involve a Federal agency and therefore be subject to Section 7 and not impacted by the preferred action alternative or any of the other 4(d) alternatives.

Gravel mining from streambeds may be further curtailed or eliminated in some areas. This may reduce the supply of concrete and other sand and gravel construction materials, but the impact is expected to be minor since other sources of gravel are available from outside (and potentially within) the area encompassed by these ESUs. In addition, certain additional restrictions may be applied to operating permits to control runoff from spoils piles, resulting in improved soil and water quality.

Public Services

Implementation of the full, preferred, and future alternatives could result in increased local or state permitting or enforcement requirements. The impact is expected to be less than significant, because the necessary state permitting and enforcement agencies relative to new project development are already in place and the change in agency workload is expected to be minimal.

Utilities and Service Systems

The preferred 4(d) alternative, the future alternatives (A and B), or the full action alternative are expected to have less than significant impacts on utilities and service systems. Existing laws and regulations currently involve specific requirements for water treatment, sewer and septic tanks, storm water drainage, and solid waste disposal. There is no expected significant change in power generation or pubic water supplies. There would be no impacts from implementation of the no action alternative, which would not require any changes from the existing conditions.

Aesthetics

Implementation of the full, preferred, or future alternatives (A and B) is expected to have positive effects on aesthetics of the environment because of reduced erosion in individual watersheds. Implementation of the no action alternative would not provide those positive benefits.

Cultural Resources

Long-term positive effects are expected for cultural resources with the implementation of any of the alternatives when compared to the no action alternative. Similar to biological resources, the fisheries related to cultural resources will be protected for future use and reduction of erosion could protect cultural resource sites. In the short-term, there could be impacts related to reductions in chinook and associated salmon harvest which uses mixed stock/species methods (e.g., gill nets). This could have an effect on subsistence uses of these species. Since NMFS expects to work with the Native American tribes that fish in the area to protect their Federally reserved fishing right, no significant impact is expected overall. Recovery of chinook populations will improve opportunities for ceremonial and subsistence fisheries in the future.

Implementation of the no action alternative could impact cultural resources, because of inadequate protection of fishery resources and cultural sites with the reliance on existing state and tribal laws, regulations, policies, and programs.

Recreation

Implementation of the preferred 4(d) alternative or either of the future alternatives (A and B) is not expected to have a significant impact on recreational opportunities. Most impacts on recreational fisheries are a result of the decline in numbers of fish. The fishery and hatchery management plans developed by Oregon and Washington will aid in maintaining existing recreational fisheries targeted on non-listed, hatchery chinook. Changes in fishing seasons or locations is expected to be minimal and therefore insignificant. Opportunities are expected to increase as chinook reach recovery, so in the long-term recreation could see a positive effect. Implementation of the full action alternative could, in this case, result in a less than significant impact to recreational fishing opportunities, because targeted and incidental take would not be allowed without a Section 10 permit. Implementation of the no action alternative could have a greater long-term impact on recreation, because no action would allow continued impacts on populations that might otherwise rebuild to provide a stronger recreational fishery.

Economic Impacts

An Initial Regulatory Flexibility Analysis (September, 1999) referenced in the proposed rule describes with as much detail as is feasible the economic impacts associated with alternative 4(d) approaches.

5. COMPARISON OF THE ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

NMFS believes that implementation of the no action alternative would likely not provide adequate protection of chinook and their habitat. While there are existing mechanisms at the state and local levels to protect chinook, in most cases, the impetus for these measures has been the recent listings of pacific salmonids and they do not yet generally provide adequate chinook protection. Further, if there were no take prohibitions implemented by NMFS, many of these cooperative efforts may take longer to be initiated or may not be initiated at all because of lack of funding or other resources. For this reason, it is expected that the no action alternative could result in impacts to chinook greater than those expected to occur from the preferred alternative and is not likely to be implemented by NMFS.

Likewise, the full action alternative, which may seem more protective of chinook and other environmental resources, is not expected to be implemented by NMFS. Implementation of all Section 9(a) take prohibitions protects the resource from many future potential impacts, because of the required Section 10 incidental take process, but it may not protect the resource as effectively and quickly as cooperative efforts that address ongoing activities. Even though a Section 10 permit is required for existing projects and ongoing operations, it is often the case with a new listing that many of these continue for years without one. Discussions may only be triggered when a permit is required because of a change in operations and could take many years to be initiated. In addition, the Section 10 process does not often allow watershed wide impacts to be addressed (except when Habitat Conservation Plans are developed), but focuses only on independent project impacts that may or may not lead to the recovery of chinook. As compared to the no action alternative, the full action alternative would be an improvement over status quo and result in less than significant environmental impacts.

NMFS believes that cooperative conservation efforts with state and local governments will best protect chinook resources in the five threatened ESUs. The type of grass-roots efforts currently being implemented and initiated will foster public education and result in

watershed restoration and conservation that will better address chinook needs. The preferred alternative will not result in environmentally significant negative impacts, but NMFS would like to see additional cooperative efforts with the ultimate long-term goal being implementation of alternative B. Implementation of either alternative A or B, when and if warranted, would represent even more gains in protection and conservation for threatened chinook.

6. FINDING

NMFS finds that implementation of the preferred alternative or future alternatives (A and B) for implementation of the 4(d) options will not have a significant effect on the environment and that long-term positive environmental effects are expected from these actions. Implementation of the full action alternative has the potential to have a few significant positive impacts. While implementation of the no action alternative has little impact on the elements of the environment reviewed, it does have some potential to have impacts to chinook and other similar or linked resources greater than those expected to occur from the preferred alternative.

Finding of No Significant Impact

For the reasons discussed in this Environmental Assessment, NMFS believes that approval and implementation of the final rulemaking governing implementation of 4(d) regulations to provide for the conservation of the chinook in the Puget Sound, Lower Columbia River, and Upper Willamette River chinook ESUs, or the alternatives to that action, would not significantly affect the quality of the human environment.

The anticipated impacts to the population under this action would be negligible. Based upon that finding, the preparation of an Environmental Impact Statement is not required by Section 102(2) of the National Environmental Policy Act or its implementing regulations.

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Penelope D. Dalton
Assistant Administrator for Fisheries
National Marine Fisheries Service

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